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2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CLAIMS

(57) [Claim(s)]

[Claim 1] It has the sound-volume control circuit which controls the level of an input sound signal, and the voice amplifying circuit which amplifies the sound signal supplied from this sound-volume control circuit, and is supplied to a loudspeaker. While the above-mentioned voice amplifying circuit consists of amplifier and output resistance, preparing the outgoing end which takes out the sound signal supplied to the above-mentioned loudspeaker from the outgoing end of this output resistance and hanging feedback gain control on the above-mentioned amplifier from this outgoing end The current detector which detects the signal current which flows to the above-mentioned output resistance of the above-mentioned voice amplifying circuit, The loudspeaker actuation

circuit characterized by adding and constituting the current control means which controls the output current of the above-mentioned voice amplifying circuit when the above-mentioned sound-volume control circuit controls the level of the above-mentioned input sound signal according to the signal current detected by this current detector.

[Claim 2] The above-mentioned current detector is a loudspeaker actuation circuit according to claim 1 which consists of differential amplifier which detects the signal current which the potential difference between the ends of the above-mentioned output resistance is supplied, and flows to the above-mentioned output resistance.

[Claim 3] The above-mentioned current control means is the loudspeaker actuation circuit according to claim 1 constituted so that it might have further the peak hold circuit which carries out the predetermined time peak hold of the output of the above-mentioned current detector and the above-mentioned sound-volume control circuit might control the level of the above-mentioned input sound signal according to the output of this peak hold circuit. [Claim 4] The above-mentioned current control means detects the signal current which flows to the above-mentioned output resistance of the above-mentioned voice amplifying circuit. When this value of the detected signal current is compared with the value

equivalent to the allowance input current value of the above-mentioned loudspeaker and the value of the above-mentioned signal current exceeds the value equivalent to the above-mentioned allowance input current value The loudspeaker actuation circuit according to claim 1 to 3 constituted so that the output current of the above-mentioned voice amplifying circuit might be controlled, when the above-mentioned sound-volume control circuit reduced the level of the above-mentioned input sound signal according to the signal current by which detection was carried out [above-mentioned].

[Claim 5] While supplying the signal current by which detection was carried out [above-mentioned] to the above-mentioned sound-volume control circuit through a switch, the above-mentioned current control means Compare with the value equivalent to the allowance input current value of the above-mentioned loudspeaker the value of the signal current by which detection was carried out [above-mentioned] in a comparison circuit, and when the value with which the value of the above-mentioned signal current is equivalent to the above-mentioned allowance input current value with this comparison output is exceeded, the above-mentioned switch is carried out to ON. The loudspeaker actuation circuit according to claim 4 constituted so that the output current of the above-mentioned voice amplifying circuit might be controlled, when the

above-mentioned sound-volume control circuit reduced the level of the above-mentioned input sound signal according to the signal current by which detection was carried out [above-mentioned].

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the loudspeaker actuation circuit where the loudspeaker was protected good, when it is used by PA (public audio) system etc. and especially the output current becomes beyond the allowance input current value of a loudspeaker.

[0002]

[Description of the Prior Art] for example, in PA (public audio) system, in order to generate the amount of Oto, it was alike occasionally, it carried out, the output current of an amplifying circuit exceeded the allowance input current of a loudspeaker, and there was a possibility that accident, such as an open circuit by generation of heat of a voice coil, might occur. Then, in order to protect a



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(21)Application number : 04-357953 (71)Applicant : KENWOOD CORP

(22)Date of filing : 25.12.1992 (72)Inventor : YOSHIDA MASAYOSHI

(54) PULSE WIDTH MODULATING AND AMPLIFYING CIRCUIT

(57) Abstract:

PURPOSE: To provide a pulse width modulating and amplifying circuit capable of suppressing the generation of distortion even at the time of connecting a protection circuit.

CONSTITUTION: The pulse width modulating and amplifying circuit having a complementary circuit 6 consisting of a P-ch field effect type transistor(FET) 4 and an N-ch FET 5 as an output stage is provided with a current detecting circuit 17 serially connected to the source of the FET 5 to detect that a current is more than a prescribed value and a switch circuit 19 for controlling a power supply to an OFF state based on the detection output of the circuit 17.

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(21)Application number : 2000-349793 (71)Applicant : SONY CORP

(22)Date of filing : 16.11.2000 (72)Inventor : ISHIDA MASAOMI

(54) OUTPUT CIRCUIT

(57)Abstract:

PROBLEM TO BE SOLVED: To protect an output circuit from an over current without using connection switches.

SOLUTION: In the output circuit, which has a serial circuit of first and second switching elements 2a and 2b, a serial circuit of third and fourth switching elements 2c and 2d and a load 6 connected between the connecting midpoint of these first and second switching elements 2a and 2b and the connecting midpoint of these third and fourth switching elements 2c and 2d and drives this load 6 by turning on and off these first, second, third and fourth switching elements 2a, 2b, 2c and 2d, current detecting means 21a, 21b, 21c, 21d and 22 are provided for detecting the respective currents of these first, second, third and fourth switching elements 2a, 2b, 2c and 2d; and when an abnormal current is

detected by these current detecting means 21a, 21b, 21c, 21d and 22, all the first, second, third and fourth switching elements 2a, 2b, 2c and 2d are turned off.

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(21)Application number : 10-345185 (71)Applicant : PIONEER
ELECTRONIC CORP

(22)Date of filing : 04.12.1998 (72)Inventor : HASEGAWA TATSUZO

INOHANA HARUYUKI

OZAWA AKIO

(54) BTL AMPLIFYING DEVICE

(57) Abstract:

PROBLEM TO BE SOLVED: To prevent the voice coil of a speaker from being damaged by providing a DC offset detector and performing detecting operation with the DC offset detector while no signal is inputted to a power amplifier.

SOLUTION: Inside an integrated circuit, power amplifiers 13 and 14, switch 15 and differential voltage detecting part 16 for detecting the differential voltage of voltages outputted from the power amplifiers 13 and 14 are provided. A control part 5 commands mute to an electronic volume 2 and makes a signal outputted from the electronic volume 2 into '0'. The differential voltage detecting part 16 outputs the difference of DC voltages outputted from the power amplifiers 13 and 14, namely, DC offset. When the read differential voltage is discriminated larger than a prescribed value, the control part 5 sends a command for turning off the

switch 15 and turns off the gap between the outputs of the power amplifiers 13 and 14 and a connecting terminal. Then, the control part 5 displays a caution on a display part 6.

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(21)Application number : 07-258399 (71)Applicant : FMS AUDIO SDN BHD

(22)Date of filing : 05.10.1995 (72)Inventor : NAKAMURA YOSHIYA

(54) DETECTION CIRCUIT FOR DEVIATION IN BIAS FOR BTL AMPLIFIER

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a bias deviation detection circuit with a simple circuit configuration, effective to protect a speaker from a DC current caused by bias deviation and offering easy layout design by inserting transistors(TRs) with a bias circuit by a time constant of parallel CR circuits between two output terminals.

SOLUTION: In a detection circuit 10, a base B1 of a PNP transistor(TR) Q1 connects to an amplifier output terminal out 1 via a resistor R1 and an emitter E1 connects to the other amplifier output terminal OUT 2, and a 1st circuit 11 consisting of parallel connection of a capacitor F1 and a resistor R2 is provided between the base B1 and the emitter E1. A 2nd circuit 12 consisting of resistors R3, R4, a PNP TR Q2 and a capacitor F2 and having the entirely the same configuration as that of the 1st circuit is provided and the circuits 11, 12 are inserted symmetrically between the amplifier output terminals out 1, 2. The any output is deviated positively or negatively from the other output, either of the

circuits is activated.

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(21)Application number : 2000-351374 (71)Applicant : SONY CORP

(22)Date of filing : 17.11.2000 (72)Inventor : NAKAGAMI TARO

SHIMA TAKASHI

MASUDA TOSHIHIKO

(54) DIGITAL POWER AMPLIFIER

(57)Abstract:

PROBLEM TO BE SOLVED: To decrease signal distortion components generated in the output signal of a digital power amplifier.

SOLUTION: By connecting load means 5, 6 and 7, among a PWM means 2 for converting a digital signal S6 to two one-side PWM signals S7 and S8, as relation of complement of '2', the output side of a first power switching means 3 for applying switching control by one of these one-side PWM signals and the output side of a second power switching means 4 for applying switching control by the other one-side PWM signal, the signal distortion component of a power signal outputted to this load means is decreased sufficiently.